

ANNALS OF NATURAL HISTORY.

I.—*On some new Forms of Arachnida.* By W. S. MACLEAY, Esq., A.M., F.L.S., &c.

[With Plates.]

WHILE I take shame to myself for never having fulfilled a promise made months ago to the 'Magazine of Zoology and Botany,' I hope to make up for past indolence by contributing my mite very frequently in future to its successor 'The Annals of Natural History.' In the mean time I shall be glad if any interest is excited by the novelty of the forms hereafter described. Four of them at least are very singular, and I have selected them as such out of a great variety of new forms in my cabinet.

M. Latreille has somewhere said that it would be difficult to discover a spider that cannot find its place in one of Walckenaer's divisions. The truth however is that naturalists as yet know but little of *Arachnida*. Leon Dufour, Koch, and even the distinguished Walckenaer himself, are acquainted with but few extra-European forms compared with the immense variety that exist. The great majority of species are inhabitants of warm climates, and being in general extremely difficult to preserve, they are therefore rare in our collections. Yet no Annulosa are more curious in their structure or perform more important functions in the œconomy of nature. My custom, when I was abroad, was to make sketches of the species while yet alive; which plan I recommend to naturalists as the only safe mode of studying these animals. The pencil is, for the entomologist, an instrument as necessary to wield as the pen.

I now place the following species before naturalists, in order to prove how little is as yet known of even that part of the class *Arachnida* which has been the most studied, namely, *Spiders**.

* For instance, not any one part of the definition given by Mr. Kirby (Int. to Ent. vol. iv. p. 397) to the *Araneidea* is correct, except that the
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Four of these species will be sufficient to show that this interesting order has never yet been correctly marked out in any entomological work. I am not fond of giving insulated descriptions without an ulterior object in view; and therefore I may as well state that my aim now is to show that a true spider may have a distinct head,—that spiders may have an articulated thorax and abdomen,—that spiders may have only two eyes,—and that those which have eight may have them disposed in systems very different from any of the systems hitherto described,—finally, that although spiders in general have their labial palpi like feet, some species on the other hand may have their true feet like palpi and their labial palpi without ungues. Nay, were I to proceed to the other orders of *Arachnida*, I could exhibit facts equally extraordinary with respect to the whole class. For the present I shall merely say that my mode of distinguishing the order of *Araneidea* from other *Arachnida* is as follows:—

Head rarely distinct from thorax.

Antennæ of two joints, the last of which is a moveable corneous fang.

Labrum and *Mandibles* confluent with the tongue so as to form the oral orifice.

Maxillary palpi five-jointed.

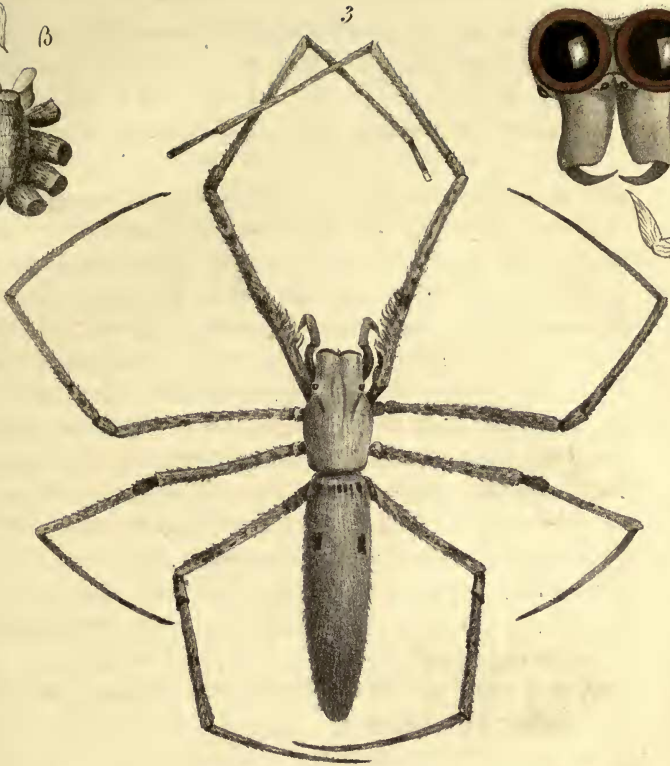
Abdomen pedunculated; furnished at the base with two or four respiratory apertures, and at the extremity with a spinning apparatus.

Feet with the coxæ and tibiæ each of two joints.

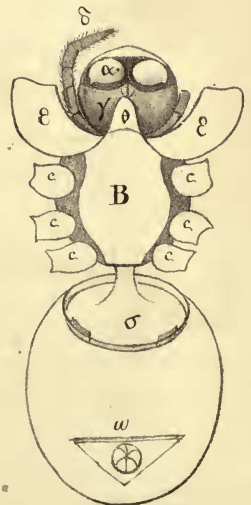
Genus NOPS.

*Antennæ** small, not advancing from under the head, the first abdomen is furnished with a spinning apparatus. Nor are the four characters given to the order by Walckenaer (*Hist. Nat. des Ins. Apt.* vol. i. p. 38) less liable to objection.

* Walckenaer asks what is the use of calling these organs *chelicera* or *antennæ*. The answer is, that if we give them the old name "mandibles," we are decidedly wrong; and that if we call them *antennæ*, we refer them to those organs of *Ptilota* with which they correspond by analogy of position. If we dissect a large *Nephila* when alive, we can easily perceive that these organs are not in the mouth, but separated from it by the labrum, which is under them, and not above them as Walckenaer erroneously says. The fact is, that the part which is called by Walckenaer the "bandeau" is not the true labrum, which is confluent with the mandibles, so as to form what the French call the "languette."



Deinopsis Lamia.



Otiothops Walckenaeri.



joint vertical, short, subconical, with the second joint or fang small, curved, acute, and of the same colour as first joint.

Eyes only two, placed close together towards the fore part of cephalothorax.

Maxillæ conspicuous, subquadrate, bent round the mentum and having their apex obliquely truncated.

Maxillary palpi having the first joint very short, the second joint obconical and elongate, the third short and bent, the fourth straight, obconical, and longer, the fifth or last thick, oval, and hirsute.

Labial palpi pediform with seven joints.

Mentum separated from the sternum by a transverse furrow; longer than broad with its frontal edge semicircular.

Head not distinct from thorax. *Cephalothorax* subtranslucid with convex back without hair, obovate, narrowing gradually towards the front, which is rounded. Its tegument is subcrustaceous, while that of the abdomen is membranaceous. This *abdomen* is a prolate spheroid terminated by six spinners of which two are inconspicuous and two are very prominent. *Sternum* twice as long as broad, oval, flat, and crustaceous. *Feet* like the labial palpi translucid; the penultimate pair being the shortest. *Ungues* short, pectinated at base. If there be a third unguis it is evanescent.

Sp. 1. *NOPS* GUANABACOE.—*Nops* sanguineo-rubra, palpis maxillaribus articulo ultimo crasso obscuro hirsuto pilis canescentibus; cephalothoracis macula oculifera parva nigra, pectore punctato plano; abdomine obscuro hirsuto, fusulis pallidioribus; pedibus versus apicem hirtis; unguibus nigris.

Long. 5 lin.

The trivial name of this remarkable spider will serve to commemorate Guanabacoa, the place where first I found it, a place in which I long resided, devoting many delightful hours to the science of natural history. The genus *Nops* is easily known from all other spiders hitherto described by having only two eyes. These are round, black, and when alive very brilliant; but they have no iris. In the species *Nops Guanabacoæ* they are set in the middle of a black spot, which is on the fore part

of the egg-shaped cephalothorax. The sternum has vestiges of those eminences at the base of the feet which distinguish *Ariadne* and certain American forms of *Dysdera*. This spider has only two pulmonary pouches; or if it has four, the additional ones are very small. It is common under stones in woods; and occurs also, although more rarely, in houses. I have never seen it making a web, so that in this respect it agrees with some of the *Drassi*. In fact, it connects the *Dysderina*, such as Savigny's subgenus *Ariadne*, with certain *Drassina*, such as Savigny's subgenus *Lachesis*.

The *Dysderina* form a curious group. In them not only have we the eyes varying in number, two, four, six, or eight, but the organs of manducation are in some species rudimentary, and in others excessively developed. I possess specimens of a translucent West Indian spider closely allied to *Filistata*, and having Mygalidous eyes situated on the balloon-shaped cephalothorax of a *Nops*. In these specimens the antennæ, maxillæ, &c. are so rudimentary and inconspicuous as would almost make us doubt that the species can be an animal of prey, did we not find it making an irregular web in the corners and crevices of houses. I call it *Hemerachne tenuipes*; and on viewing it we can the better understand how *Nops* and *Ariadne* should have small antennæ, while *Dysdera erythrina* has these organs so large.

I place *Nops* among the *Dysderina*, and not among the *Drassina*, on account of its hard tegument; for the *Drassina* in general have this very tender, and thus we see *Clubiona* and other comparatively delicate genera not only to form the food of *Hymenoptera* like *Pelopæus*, but even of *Diptera*. I have caught various species of *Asilidæ* in the act of devouring these tender-skinned spiders, so that if certain spiders live on flies, there are also certain flies that feed on spiders. But to return to *Nops Guanabacoæ*, the figure I give of it was drawn by Mr. Charles Curtis from a dried specimen in my cabinet, and coloured from a sketch made by me in Cuba of the live animal. I possess another species of the genus which has no black spot on the cephalothorax.

I take this opportunity of saying that I shall be glad to exchange specimens of *Nops* for specimens of the genus *Artema*,

Walck., or *Tessarops*. *Tessarops* is a genus described by Rafinesque in the 'Annales des Sc. Phys. de Bruxelles,' and to which some doubt is attached. Although I have no hesitation in admitting that spiders may occur with four eyes as well as with two, six, or eight; still the magnified hind leg as figured by Rafinesque, and other circumstances connected with the peculiar character of the author, make me agree with Latreille in considering the existence of *Tessarops maritima* as extremely apocryphal. If any such being exists, I suspect it will be found to have been most incorrectly described. At all events, I cannot believe it properly placed by Latreille among the saltigrade spiders; nor do I think it can on the other hand be very nearly allied to *Nops*. It seems, if I may be allowed to found a conjecture upon a figure so bad and a description so lame as those of Rafinesque, to be more closely connected with a singularly flat and minute hard-shelled six-eyed spider with a sessile abdomen, which is to be found in Cuba among old papers and in boxes of insects, and which passes off directly to the *Acaridea* or order of mites. I have called it *Sclerachne*; for its tegument is even more hard in proportion to its size than that of the genus *Gastracantha* of Hahn, or any of the cancriform *Epeiridæ* which form Walckenaer's genus *Plectanus*.

PLATE I. Fig. 1. *Nops Guanabacoæ* magnified.

Genus SELENOPS, *Dufour*.

Antennæ short, with the first joint subconical, and the second joint or fang hooked and sharp.

Eyes eight, six of which are placed in a semicircle with the arch convex forward, the two lateral ones being the largest and rather further removed from the intermediate four than these are from each other. The remaining two eyes, which are the least of all, are anterior, placed one on each angle of the head and nearly on the same line with the two middle ocelli of the semicircle.

Maxillæ straight.

Maxillary palpi having the first joint very minute.

Labial palpi pediform and seven-jointed.

Mentum rounded at apex.

Head not distinct from thorax. *Body* very flat on the ground with the legs also extended flat on the same surface. *Abdomen* soft with six fusi.

Of the genus *Selenops* Walckenaer gives three subgenera, *Omalosoma*, *Apharteres*, and *Aissus*. Near to the latter comes the following additional form of *Selenops*, which I shall call *Hypoplatea*.

Subgenus HYPOPLATEA.

Antennæ with two teeth on the inner side of the groove of first joint.

Eyes, the two lateral ones of the arch rather oval in form.

Maxillæ subparallelogrammic, being obliquely truncated at the inside.

Maxillary palpi having their terminal joint the longest and crowned with an unguis.

Mentum semicircular.

Sternum suborbicular, but posteriorly emarginate.

Abdomen as wide as the cephalothorax.

Feet, the last pair but one the longest. *Tarsi* having a cushion surmounted by two very minute unguis.

Sp. 2. HYPOPLATEA CELER.—*Hypoplatea* flavescenti-grisea, abdomine fascia apicali nigra emarginata terminato; ad basin tripunctato, punctis inter pilos ochreo-flavos nigris; femoribus trifasciatis fascia media fulva utrinque nigra fasciis externis nigris; tibiis subfasciatis.

Long. $6\frac{1}{2}$ lines.

This species is common in Cuba, darting in the rainy season with extreme velocity over the plastered floors. Its body and legs are extended so flatly on the surface on which it moves, and moreover it has the Thomisidous faculty of running backwards so strongly developed, that it is sure, along with various little lizards of the subgenus *Sphæriodactylus*, to attract the attention of new comers, when, owing to certain qualms inside and torrents of rain outside, they shut themselves up in their apartments to ponder gloomily over the novelties of a West Indian climate. I possess other species of the genus, but which belong to Walckenaer's subgenus *Aissus*, and which are only to be found on the trunks of trees. These are seen like a ray of light to flash before the entomologist when they have been dislodged by his stripping off the

bark in search of insects. The difference between the West Indian subgenera *Aissus* and *Hypoplatea* is that in the former the first pair of feet are the longest, whereas in *Hypoplatea* it is the penultimate pair; besides in *Aissus* the two large lateral ocelli are round, in *Hypoplatea* they are oval. The mentum of *Omalosoma*, another subgenus of *Selenops*, is not truly semicircular, nor does that kind of spider lie so broad and flat on the ground as *Hypoplatea*. In general aspect *Hypoplatea* bears great resemblance to the genus *Artamus* of Koch, but differs from it altogether in the disposition of the eyes. *Thanatus*, Koch, *Artamus*, Koch, *Selenops*, Duf., *Philodromus*, Koch, and *Olios* of Walckenaer (which last is identical with Koch's *Ocypete*, a name that cannot stand as it has been elsewhere employed), all form a group of laterigrade spiders which perhaps are the swiftest of the whole order. They lie in wait for their prey like the saltigrade spiders and those other laterigrade spiders of which *Thomisus* is the type; but instead of leaping on their food like *Thomisus*, they catch it by their extreme velocity in running. They differ thus also from the *Lycosina*, which regularly hunt down their prey*; and I may take this opportunity of observing that Koch makes a gross mistake in placing Walckenaer's genus *Ctenus* among the *Krabbspinnen*. *Ctenus* is not a laterigrade spider, but has all the habits and structure of the *Wolfspinnen*, as I know by personal experience, the genus being very common in Cuba. Latreille is also wrong in calling the *Wolfspinnen* "citigrades" *par excellence*, for they are far less swift than the present group.

I have introduced *Hypoplatea* in this place, not so much from the form being new to science, as in order to show the proper mode of considering the ocellar system of spiders when we are investigating their affinities. *Thanatus* and *Artamus* have nearly the typical system of ocelli which prevails throughout the greatest part of the laterigrade spiders, of which it may be said that the arch of their eyes is typically convex outwards in opposition to that of the *Drassina*, where

* On this account Walckenaer is wrong in placing the genus *Oxyopes*, Lat., or his own *Sphasus* among the *Lycosina*. I have always found these *Oxyopes* on syngenesious flowers sedentary like *Thomisi*. One large green species of *Oxyopes* is common in Cuba. I call it *O. floricola*.

the arch is typically convex inwards. Now the *Thomisidæ* in general may be said to have their eight eyes disposed, four and four, in two concentric arches, of which the curve is convex in front. The four ocelli of the inner arch remain pretty nearly in all the *Thomisidæ* at equal distances from each other: so also do the four of the outer or front arch in *Artamus*. In the nocturnal genus *Olios*, of which the type is the *Aranea venatoria* of Linnæus and the manners very singular,* the convexity of the front arch is scarcely to be detected. In the aberrant genus *Thanatus*, which is close to *Ocyale* and *Dolomedes*, it is more visible. In *Philodromus* of Koch we see the four front eyes going two and two to each side of the head. In the genus *Selenops* the anomaly is at the extreme, so as to place the outer edge of what is ordinarily the front arch in the curve of the inner one and the other eyes a little lower. Thus in the subgenus *Hypoplatea* there are six ocelli in an arch convex outwards and two others in front, one at each corner of the head. The sketch of *Hypoplatea celer* was taken by me from the animal immediately after death.

PLATE I. Fig. 2. *Hypoplatea celer* magnified. α , system of eyes; β , mentum, maxilla and maxillary palpus; γ , sternum.

Genus DEINOPIS.

Antennæ proceeding vertically downwards nearly in the same plane with the two large eyes. First joint subquadrate, the second joint or fang closes inwards.

Eyes eight, two dorsal and six frontal; of these last two enormously large black, shining, spherical eyes occupy the half of the front. Under these in the middle are two very minute ocelli; and two others also small are placed below, one on each, outside of the large eyes, but not on the same vertical plane with them, for these last two small ocelli are somewhat lateral.

Maxillæ subquadrate, thick, and diverging from the mentum.

Maxillary palpi with the first joint somewhat dilated; the others cylindrical, nearly equal, excepting the last, which

* Walckenaer is in error when he says that this genus feeds on lizards. I believe that no spider lives on Vertebrata. *Thomisus morbillosus* of the Appendix to King's Survey of the Intratropical Coasts of New Holland belongs to the genus *Olios*.

is subovate and terminates in a very minute unguis in the female.

Labial palpi seven-jointed and pediform ; but differ from the feet not only in being longer, but also in the joint corresponding with the femora, which is stouter and emarginate at the base. This joint moreover is furnished nearly half-way on the inside with curved setæ. The last joints of the labial palpi are also thicker than the corresponding tarsi of the true feet, and their basal joint is indistinct.

Mentum separated from the sternum by a transverse furrow, longer than broad, restricted in the middle, and having a semicircular apex.

Body slender, more than five times as long as broad. *Head* confluent with body. *Cephalothorax* convex in front, and as broad as abdomen, behind broader and depressed. The cephalothorax above presents an anterior elevation in the form of a pentagon, which is the true head ; the base of the pentagon being the front of this head, which is truncated in front, rounded off at the sides, and canalculated longitudinally in the middle, while each of the lateral posterior angles of the pentagon supports a small black eye. The head from the base of the above-mentioned pentagon is perpendicularly truncated, and thus presents a vertical face, in which are situated the other six eyes.

Sternum of three distinct segments.

Abdomen more than twice as long as the rest of the body, sub-cylindrical, only gradually tapering towards the point. *Fusi* inconspicuous. *Feet* slender, of which the first pair is longer than the third, and the third pair than the second, all being long and slender, and having inconspicuous unguis.

Sp. 3. *DEINOPIS LAMIA*.—*Deinopis villosa* grisea ; capite medio lineis duabus ochraceis obscuris ; sterno vitta nigra lata utrinque instructo ; abdomine punctis quatuor minutis nigrescentibus basalibus, maculisque duabus versus medium nigris ; pedibus maculis nigrescentibus variegatis.

Long. $5\frac{1}{2}$ lines.

One of the distinguishing characteristics of the class *Arachnida* is the disposition of the segments of their body to become confluent. Even when, as for instance in the scorpions, the

segments are in general distinct, the head remains confluent with the thorax. In general the dorsal segments have this disposition to become confluent more strongly than those of the under side; and thus in the cancriform *Epeiridæ* we can detect the vestiges of articulation on the under side of the abdomen, and in *Deinopis* on the under side of the cephalothorax. But what makes the present spider above all others interesting is the position of the eyes, which are remarkably unequal in size. Two of them are dorsal as usual, but the other six have a rather novel situation, not being visible when we look on the back of the insect. The head, being truncated in front, presents, like that of certain saltigrade spiders, or rather like certain Crustacea, a vertical face. Half of this face is occupied by two enormous black eyes, set in blood-red circular rims*, which touch each other laterally, and form irides that give our spider a most truculent aspect. This curious system of eyes may, however, be easily approximated to that of *Ctenus*, if we make no account of the truncation of the head. I found *Deinopis*, with the last-mentioned genus and *Dolomedes*, under stones in the island of Cuba. It must be assigned to the *Wolfspinnen* of Koch, but it is very unlike any of them hitherto known. My drawing was made from it while yet alive. I never found the male.

PLATE II. Fig. 3. *Deinopis Lamia*, magnified. α , front and vertical view of head; β , sternum, mentum, maxillæ, and a maxillary palpus.

Genus MYRMARACHNE.

Antennæ twice as long as head, with the first joint thick, exserted, subtrigonal, plane above, and armed beneath and on the inside with six minute spines; the second joint or fang long, slender, sinuated, and very sharp at the point.

Eyes eight, disposed as in *Attus*.

Maxillæ short, straight, dilated and rounded off at their extremity.

Maxillary palpi having their first joint small; the second obconical, subtrigonal, and thrice as long as the third; the third, fourth and fifth forming an obconical club, of which

* This fact proves the affinity of *Deinopis* to the *Lycosina* and Saltigrade spiders, where the two largest ocelli of the eight may be seen to have the pupil, as it were, surrounded by a coloured iris as in Vertebrata.

the former is the shortest joint, and the last is by far the thickest, being truncated and concave at the apex.

Labial palpi pediform and 7-jointed, only the basal joint is evanescent.

Mentum oval, elongate.

Body with a subcrustaceous tegument. *Head* distinct from thorax though soldered to it; quadrate and convex on the upper side, where the eyes are placed. *Thorax* ovate, narrower and longer than the head, and convex also on the upper side. *Abdomen* subarticulate, arched, pedunculated at the base, swelling in the middle, with a convex back and dilated margined sides, and then terminating in a spindle; the peduncle before mentioned being slender, cylindrical, and longer than the head. *Feet* are like the labial palpi, but the two first pair are somewhat shorter. *Ungues* not very conspicuous.

Sp. 4. MYRMARACHNE MELANOCEPHALA.—*Myrmarachne* capite nigro; antennarum articulo primo rufo basi flavo; palpis maxillaribus brunneonigris; thorace abdominisque pedunculo rufis; abdomine nigro; palpis labialibus pedibusque piceis.

Long. $4\frac{1}{2}$ lin.

This handsome spider is a native of Bengal, and I present a figure of it, made by my friend Mr. C. Curtis, in order to show the relation which it bears to the American subgenus, called *Myrmecium* by Latreille. *Myrmarachne* is even still more like than *Myrmecium* to an ant or *Mutilla*. Its hard corneous envelope, its distinct head, the long peduncle of its abdomen, and its insected body, all tend to aid the deception in the most striking manner. It evidently comes between *Attus formicoides*, Walck., and *Myrmecium rufum*, Lat. It has the eyes of the former spider, except that the two smallest and middle ones are not placed at the margin of the head. With the latter spider it agrees in the head being even still more perfectly distinct from the thorax, as well as in the abdomen being subarticulate. *Myrmecium*, however, in its eyes, approaches, as Walckenaer observes, to *Dolomedes*, while the antennæ are short and of an ordinary form.

In *Myrmarachne melanocephala* the antennæ are long, stout, and the first joint has a tubercle on the upper side of its apex, and its whole plane upper side is transversely striated. No-

thing is certainly known with respect to the manners of these curious spiders, but I suppose, from analogy, that they may eventually be found to feed on ants. It has been long known that the *Volucellæ* in their larva state live in the nests of the *Bombi* they so much resemble; and I have discovered that the larvæ of those tropical *Bombylii* which have such a bee-like form live on the larvæ of the bees they so strikingly represent. Perhaps, in like manner, the object of nature in giving such a striking form to this spider is to deceive the ants on which they prey.

Attus of Walckenaer is a very good subgenus, if the name be confined to such ant-like insects as *Aranea formicaria* of DeGeer, and *Attus formicoides* of Walckenaer. Latreille's name, *Salticus*, ought therefore to be confined to those saltigrade spiders of which the *Aranea scenica* of Linnæus may be considered the type. This, however, is an use of the two generic names the very reverse of that which is proposed by Sundevall in his description of the spiders of Sweden.

PLATE I. Fig. 4. *Myrmarachne melanocephala*, magnified. α , system of eyes; β , antenna; γ , abdomen viewed laterally.

Genus OTIOTHOPS.

Antennæ short, having the first joint transversely vertical, subcuneiform, and the second joint or fang minute and horizontal.

Eyes eight; the four frontal ones disposed in a transverse line, of which the two on the outside are the least and suboval; behind these last there are two other eyes placed small and round; and the remaining two are in the middle between them only placed further behind; these two are so confluent that to the naked eye the spider seems to have only seven ocelli. (In my specimen the right ocellus is evanescent, and the left is very large and of a silvery lustre.)

Maxillæ large, subtriangular, truncated at the apex, and having the palpi inserted at their very base.

Maxillary palpi with the penultimate joint short, and the last one long, triangular and hirsute.

Labial palpi vertical, not pediform, six-jointed; first joint curved, thick; second semilunar, much incrassated; third